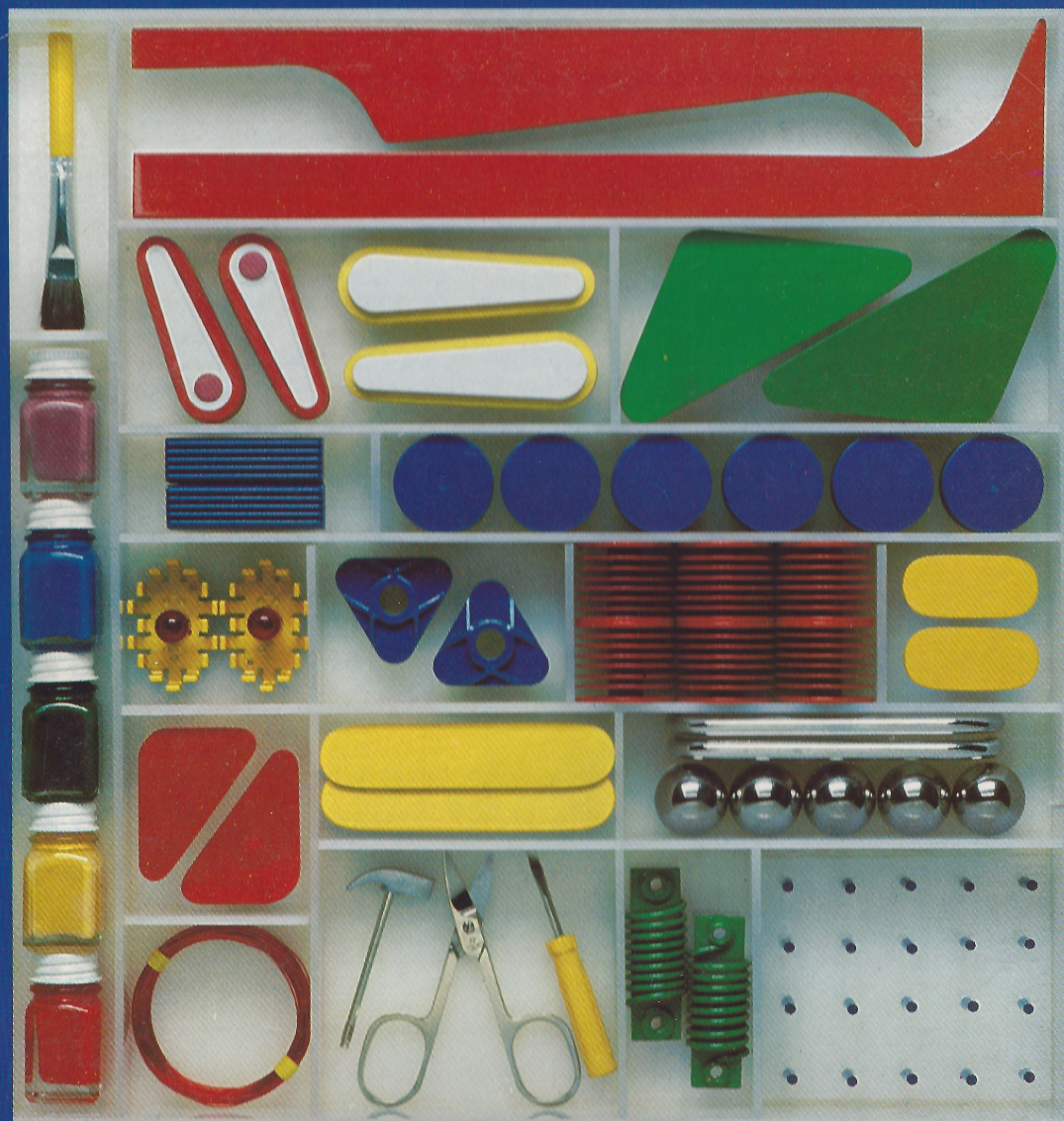
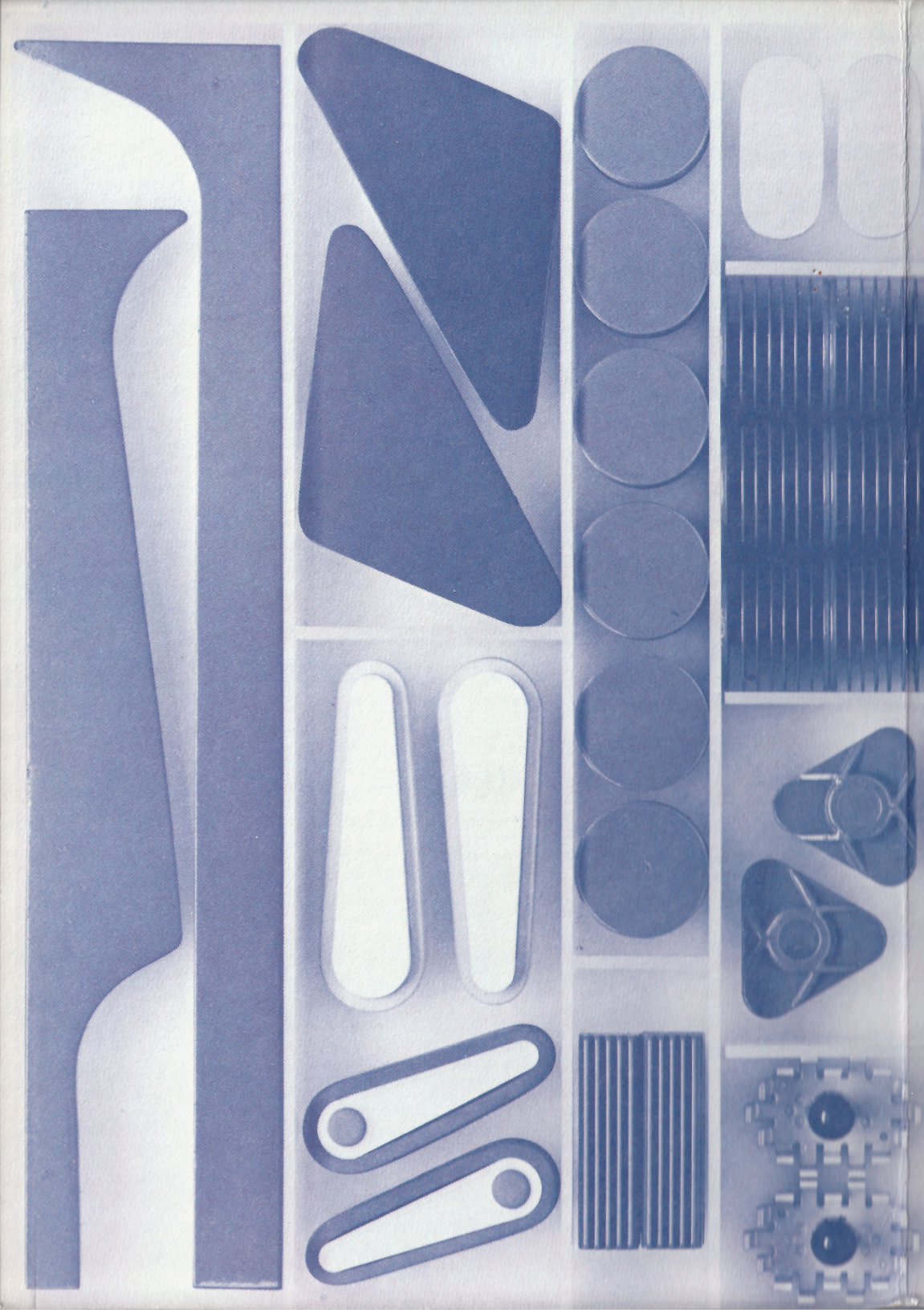


# Pinball Construction Set

A video construction set™ from BudgeCo









# PINBALL CONSTRUCTION SET

Budge Co.  
428 Pala Avenue  
Piedmont, CA. 94611

© 1982 Budge Co., Inc.




# PINBALL CONSTRUCTION SET

Bridge Co.  
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Piedmont, CA 94611

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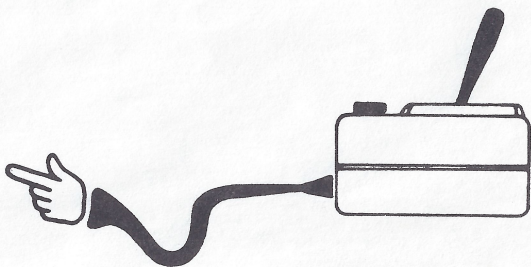




I would like to thank Pete Rowe and Ted Cohn for providing the BUGBYTER debugger and numerous assembler/editors, Andy Hertzfeld and Burrell Smith for ideas and encouragement, and Steve Jobs and Steve Wozniak for making it all possible in the first place.

Bill Budge  
November 1982





## INTRODUCTION

The Pinball Construction Set from BudgeCo builds video pinball games for your Apple II personal computer. But it is much more than just another game utility or development tool. A great deal of effort has gone into making the PCS fun to use, and the result is a system where interaction is so simple and unrestricted that we call it the first software toy. We hope you get as much pleasure out of playing with it as you do with playing the pinball games it produces.

Insert the PCS disk in your disk drive and turn on the computer. Let's play!

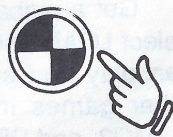
## MOVING THE HAND

To let you "touch" your Pinball Construction Set, BudgeCo has included a video "hand" which you can control with your joystick. By moving the joystick lever up or down, left or right, you propel the hand on the screen. When the lever is near its centered position, the hand stops. If you press a joystick button you make the hand grasp or select whatever it is touching.

Using the joystick can be difficult at first, but with practice it quickly becomes second nature.



## PICKING THINGS UP AND DRAGGING THEM



Use the joystick now to pick up a bumper from the parts box. First guide the hand so that its index finger is touching some part of the large bumper. Then press a joystick button, and holding it down, "drag" the bumper onto the empty game board. Let go of the button when you want to let go of the bumper.

Get another piece from the parts box and put it on the board. Drag one of the pieces on the game board back into the parts box and see what happens.

## MENU SELECTION AND PLAYING THE GAME



Now that you know how to build a game, it's time to play pinball. Get a ball from the top row of the pinball parts box and put it near the top of the game board. Then move the hand so it is touching the PLAY icon. Press a button and release it. This action is called "selecting" PLAY, and it causes the pinball simulation to be invoked. Your game will run forever, or until you press the ESC key on your Apple keyboard. Press ESC now, add some flippers to your game, and play some more.



## LOADING AND SAVING GAMES



Get a pinball game from the disk. First select the DISK icon. Then select LOAD and type "DEMO1" followed by the RETURN key. Now you can play and edit the pinball game named DEMO1. There are three other games included with your construction set, named DEMO2, DEMO3, and DEMO4.

You can save games (on some other initialized disk, not the PCS disk) in a similar way. Select SAVE and type the name of the game.

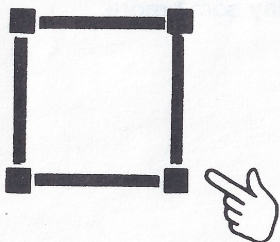
If, while typing a name, you make a mistake, you can back up by pressing the left arrow key. If you press the ESC key, the load or save is cancelled.

Select QUIT to bring back the parts box, making sure the PCS disk is in the disk drive.

## ADVANCED PINBALL CRAFTSMANSHIP

The Pinball Construction Set contains tools for working the boundary and obstacles on the game board. To add obstacles, drag a polygon from the parts box. Polygons are like other pinball pieces, except that they can be shaped and painted.

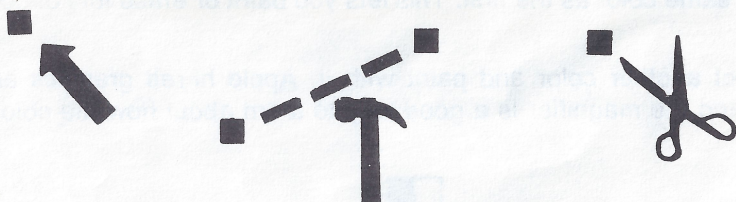
Drag a polygon onto the game board, select the PAINTBRUSH (just below the HAMMER) and select your favorite color. Now touch the inside of your new polygon with the paintbrush and press a button. This is how you paint a shape.



Now select the **POINTER**. The knobs of all polygons on the screen become visible when a knob tool is selected. Grasp one of the knobs on your new colored polygon and drag it around. You can move it anywhere on the board, though for best results, polygons shouldn't overlap or have crossed edges.

A polygon with only four knobs isn't very useful. To create more complex shapes, you can add knobs with the **HAMMER**. Select the **HAMMER** and position it midway between two existing knobs. Press a joystick button and a new knob will appear. If you press and hold the button down, a knob is created and you can drag it to any desired position.

You can remove knobs with the **SCISSORS**. Select the **SCISSORS** and move it so that its tip is near the knob you want to cut out. Press a button and the knob will disappear.



Sometimes working a polygon produces degenerate shapes, such as horizontal lines, or shapes that are too complicated for the PCS to handle. In such cases, the PCS will attempt to recover by undoing your last command, or by deleting the polygon. You too can recover from confusion by dragging a polygon off the game board and starting over. Next to the polygon in the parts box are some pre-fab polygons. These are commonly used shapes, and can be worked like any other polygon.

It is important to make sure that no two edges of a polygon cross each other. Where edges cross, balls behave incorrectly. If a ball is acting strangely, check your polygons and move or cut out any knobs that are causing edges to cross.



## PAINTING DETAILS



Sometimes you will want to paint tiny things, so a magnifier and a special paintbrush have been provided. Select the **MAGNIFIER**. Your hand will become a paintbrush and a magnifier and view rectangle will appear. The magnifier shows the contents of the view rectangle (in the top left), magnified 7 times. You can drag the view rectangle anywhere on the screen.

To paint, move the brush into the magnifier and press button **ONE**. If the brush was touching a black area, a white dot will appear, while if it was touching a white area, the dot will be cleared to black. Holding the button down and moving the brush will cause other dots to be painted, each the same color as the first. This lets you paint or erase lots of dots quickly.

Select another color and paint with it. Apple hi-res graphics are strange and the magnifier is a good way to learn about how the colors work.



For advanced users, and those with black and white monitors, there is a black and white magnifier. Select the **B/W** icon. Only black and white may be painted now, so selecting colors has no effect. You may notice that half dot shifting is visible in the magnifier. If you want to paint shifted dots, press button **TWO** when you paint.

The **GRID** icon provides grid lines to help in lining up dots.



To bring back the pinball parts box, select **QUIT**.

## CHANGING THE WORLD SETTINGS



The Pinball Construction Set comes with settings for the physics of a normal world. You can change these settings, however, to create a different world. Select the WORLD icon. Then, just drag the slides up or down to:

Decrease or increase gravity.

Decrease or increase the speed of the simulation.

Decrease or increase the kicking strength of bumpers.

Decrease or increase the elasticity (resilience) of collisions between balls and polygon surfaces.



## USING THE WIRING KIT



Pinball pieces come from the parts box with preset values for score and noise. A wiring kit is provided if you want to change these values. Select the AND GATE icon to use the wiring kit. All polygons will disappear, leaving only pinball pieces. If you select a piece on the game board, it and its values for score and sound will be highlighted. You can change those values while the piece is selected by choosing another value from the score or sound menus. It is possible to specify no score or no sound by selecting a value, and while the button is still down, moving the hand away from the selections.

You can also select one of the AND GATES near the top center of the screen. When you select an AND GATE, bonus and sound values are highlighted as before, and in addition, the conditions for that bonus and sound become visible. The conditions specify which pieces must be ON before the AND GATE goes ON and the player gets the bonus.



The SCREWDRIVER is used to select the pieces which are conditions for the highlighted AND GATE. Select an AND GATE, select the SCREWDRIVER, and then select the piece that is to be a condition. Up to three pieces may be conditions for a single AND GATE. That AND GATE's bonus and sound will then be processed (during play) only when all of its conditions are ON.

Conditions to AND GATES may be removed with the wire cutting PLIERS. Select the PLIERS, then select the piece which is no longer to be a condition.



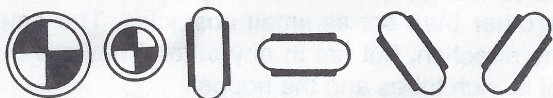
A piece that is a condition is ON when it is hit by a ball or when all of its components have been hit. You can tell when a piece is ON. It will flash, or blink, or do something else which it doesn't normally do. Balls, flippers, gates, lanes, the launcher and the magnet are never ON, though, and cannot be used as conditions.

## THE PINBALL LIBRARY

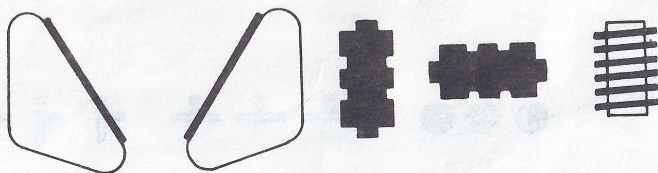
The most important pieces in the parts box are the flippers and balls. There are left and right flippers in two sizes, and one ball. You can have as many of these as you want (up to 128 pieces may be on the board at once) and put them wherever you want, even inside other objects.



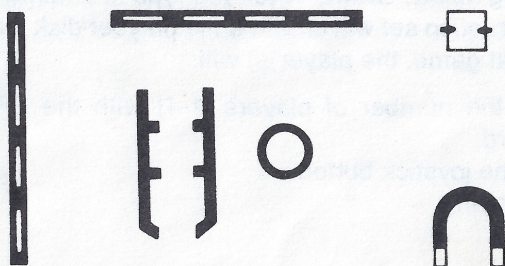
Bumpers can make a dull game fast and exciting. There are two sizes of round bumpers, and four rectangular ones. All have equal kick strength, directed normal to the surface tangent at the point of collision with the ball. The kick strength is determined by the world settings.



Slingshots and knockers are similar to bumpers, but they kick the ball selectively. The left and right slingshots kick the ball on their hypotenuse, but behave like polygons anywhere else. The two knockers will kick the ball if it hits them on their ends. The launcher will kick the ball if a joystick button is pressed. Its kick strength is determined by the joystick lever. A launcher should be used in most games to put balls in play.



The two drop target sets are really four pieces, grouped together. When all four parts of a drop target set are hit by balls, it turns ON and returns to its initial state. The ball hopper catches balls. It can hold two, and when a third comes along, it lets them all go for multi-ball play. The ball disintegrator also catches balls, but it eats them. The spinner spins when a ball hits it, while the magnet holds on to the ball for a second or two.





The lanes and gates are used to direct balls. Lanes don't do anything, really, other than act as small obstacles. The gates allow balls to pass in one direction, but not in any other. They are useful for keeping balls out of launch tubes and the hopper.



Rollover lights and targets add the finishing touch to a pinball game. The rollovers just turn ON when a ball hits them. The ball goes right through them. Targets turn ON when hit, and the ball bounces off of them.



## MAKING A GAME


Now that you are an accomplished pinball designer, the time has come to create a pinball game that you can give to your friends or sell. You can do this by selecting the DISK icon, SAVEing your game and then selecting MAKE GAME. After you type in a name for the game, the pinball construction set will create a file on your disk that you can BRUN to play. In that game, the player(s) will:

Select the number of players (1-4) with the SPACE bar on the keyboard.

Press the joystick button.

Start playing.





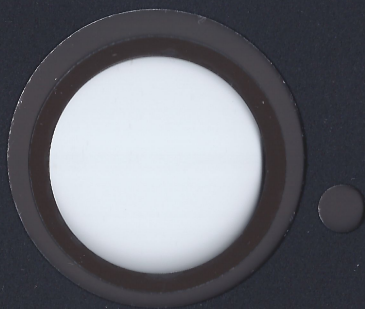
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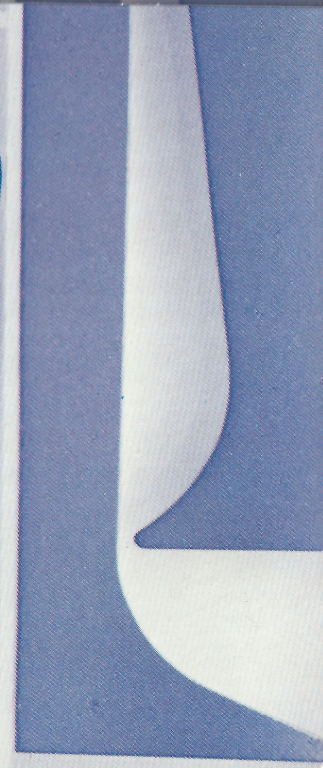
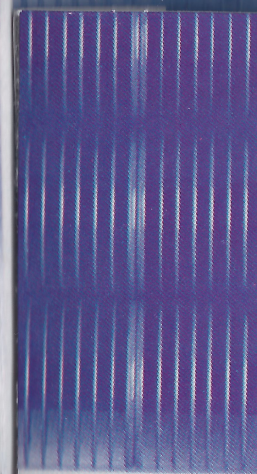
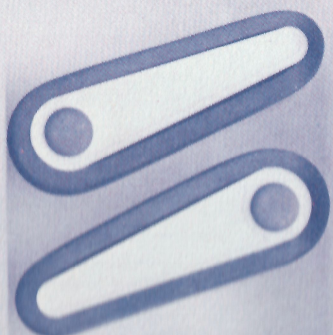
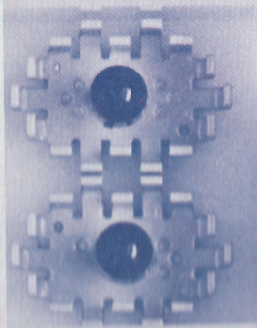
A video construction set™ from BudgeCo



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# Pinball Construction Set

by **Bill Budge**

The Pinball Construction Set contains the pieces and tools to make millions of hi-res video pinball games. No programming or typing is necessary. Just take parts from the set and put them on the game board. Press a button and play!



Use the video tools to make borders and obstacles.

Add game logic and scoring rules with the wiring kit.



Create hi-res designs and



logos using the BudgeCo magnifier. Color your designs with the paint brush.

## **Guarantee**

This program is fully guaranteed. If it ever fails to boot, return the disc to BudgeCo for replacement.

If the disc has been physically damaged, enclose \$2 for replacement disc.

*BudgeCo* Inc.

428 Pala Ave., Piedmont, CA 94611  
(415) 658-8141

**REQUIRES: 48 K Apple® II or Apple II Plus • 16 sector controller (DOS 3.3) • 1 or 2 button joystick**

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